Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1.(previously presented) A method for site-specific chemical modification of an HIV gp41-derived peptide during synthesis of the peptide, wherein the synthesized peptide has one or more amino acids having a side chain amine, the method comprising incorporating into the peptide, or a fragment thereof, during synthesis:

(a) at least one amino acid selected to have its side chain amine chemically reacted with a chemical protecting agent which protects the side chain amine from subsequent chemically reactivity with an amine-reactive functionality; and

(b) at least one amino acid having an amine unprotected and free for reacting with an amine-reactive functionality, wherein the free amine is selected from the group consisting of an N-terminal amine, a side chain amine, and a combination thereof.

2.(previously presented) The method according to claim 1, wherein the HIV gp41-derived peptide is synthesized by covalently coupling two or more fragments to produce the synthesized peptide; and wherein incorporated into at least one of the fragments is an amino acid having a side chain amine chemically reacted with a chemical protecting agent.

3.(previously presented) The method according to claim 1, wherein the HIV gp41-derived peptide is a peptide having an amino acid sequence of any one of SEQ ID NOs: 1-175, or an amino acid sequence having at least 95% identity with any one or more of SEQ ID NOs: 1-175.

4.(previously presented) The method according to claim 1, wherein the chemical protecting agent is selected from the group consisting of 1-(4,4-dimethyl-2,6-dioxocyclohex-1-ylidene)ethyl, 1-(4,4-dimethyl-2,6-dioxocyclohex-1-ylidene)-3-methylbutyl, allyloxycarbonyl, benzyloxycarbonyl, and 2-chlorobenzyloxycarbonyl.

5.(currently amended) The method according to ~~any one of~~ claim~~s~~ 1, ~~2, 3, or 4,~~ wherein an amino acid having its side chain amine chemically reacted with a chemical protecting agent is lysine.

6.(currently amended) The method according to ~~any one of~~ claims 1, ~~2, 3, or 4,~~ wherein a side chain amine that is chemically reacted with a chemical protecting agent is an epsilon amine.

7.(previously presented) An isolated HIV gp41-derived peptide having one or more amino acids containing a side chain amine, wherein at least one amino acid has its side chain amine chemically reacted with a chemical protecting agent which protects the side chain amine from subsequent chemically reactivity with an amine-reactive functionality; and at least one amino acid of the peptide has an amine unprotected and free for reacting with an amine-reactive functionality, wherein the free amine is selected from the group consisting of an N-terminal amine, a side chain amine, and a combination thereof.

8.(previously presented) The HIV gp41-derived peptide according to claim 7, wherein the peptide is a peptide having an amino acid sequence of any one of SEQ ID NOs: 1-175, or an amino acid sequence having at least 95% identity with any one or more of SEQ ID NOs: 1-175.

9.(previously presented) The HIV gp41-derived peptide according to claim 7, wherein the chemical protecting agent is selected from the group consisting of 1-(4,4-dimethyl-2,6-dioxocyclohex-1-ylidene)ethyl, 1-(4,4-dimethyl-2,6-dioxocyclohex-1-ylidene)-3-methylbutyl, allyloxycarbonyl, benzyloxycarbonyl, and 2-chlorobenzyloxycarbonyl.

10.(currently amended) The HIV gp41-derived peptide according to ~~any one of~~ claim~~s~~ 7, ~~8, or 9,~~ wherein the amino acid having its side chain amine chemically reacted with a chemical protecting agent is lysine.

11.(currently amended) The HIV gp41-derived peptide according to ~~any one of~~ claims 7, ~~8, or 9,~~ wherein the side chain amine that has been chemically reacted with a chemical protecting agent is an epsilon amine.

12.(previously presented) A method for producing a substantially homogeneous conjugate comprised of HIV gp41-derived peptide and polymer, the method comprising:

(a) synthesizing an HIV gp41-derived peptide having one or more amino acids containing a side chain amine so that at least one amino acid is selected to have its side chain amine chemically reacted with a chemical protecting agent which protects the side chain amine from subsequent chemically reactivity with an amine-reactive functionality, and at least one amino acid of the peptide has an amine unprotected and free for reacting with an amine-reactive functionality, wherein the free amine is selected from the group consisting of an N-terminal amine, a side chain amine, and a combination thereof; and

(b) covalently coupling a polymer to the HIV gp41-derived peptide by chemically reacting an amine-reactive functionality of the polymer to a free amine group of the HIV gp41-derived peptide, wherein polymer is covalently coupled only to the one or more amino acids having a free amine, and not to the at least one amino acid protected by the chemical protecting agent, in producing the substantially homogeneous conjugate.

13. (previously presented) The method according to claim 12, wherein the conjugate comprises an HIV gp41 derived peptide covalently coupled to more than one molecule of polymer, wherein each molecule of polymer is coupled to an amino acid of the HIV gp41-derived peptide.

14.(previously presented) The method according to claim 12, wherein the method further comprises removing the chemical protecting agent from the substantially homogeneous conjugate.

15.(previously presented) The method according to claim 12, wherein the HIV gp41-derived peptide is synthesized by covalently coupling two or more fragments to produce

the synthesized peptide; and wherein incorporated into at least one of the fragments is an amino acid having a side chain amine chemically reacted with a chemical protecting agent.

16.(previously presented) The method according to claim 12, wherein the HIV gp41-derived peptide is a peptide having an amino acid sequence of any one of SEQ ID NOs: 1-175, or an amino acid sequence having at least 95% identity with any one or more of SEQ ID NOs: 1-175.

17.(previously presented) The method according to claim 12, wherein the chemical protecting agent is selected from the group consisting of 1-(4,4-dimethyl-2,6-dioxocyclohex-1-ylidene)ethyl, 1-(4,4-dimethyl-2,6-dioxocyclohex-1-ylidene)-3-methylbutyl, allyloxycarbonyl, benzyloxycarbonyl, and 2-chlorobenzyloxycarbonyl.

18.(previously presented) The method according to claim 12, wherein the polymer comprises polyethylene glycol.

19.(currently amended) The method according to ~~any one of~~ claim~~s~~ 12,~~ 13, 14, 15, 16, 17, or 18,~~ wherein an amino acid having its side chain amine chemically reacted with a chemical protecting agent is lysine.

20.(currently amended) The method according to ~~any one of~~ claim~~s~~ 12,~~ 13, 14, 15, 16, 17, or 18,~~ wherein a side chain amine that has been chemically reacted with a chemical protecting agent is an epsilon amine.

21.(currently amended) A substantially homogeneous conjugate comprised of HIV gp41-derived peptide and polymer, wherein~~ produced according to the method of any one of claims 12, 13, 14, 15, 16, 17, or 18~~ the polymer is covalently coupled to the synthetic peptide at only one or more amino acids of the synthetic peptide selected to be covalently coupled to the polymer during the synthesis of the substantially homogeneous conjugate.

22.(currently amended) The substantially homogeneous conjugate ~~comprised of HIV gp41-derived peptide and polymer~~ according to claim 21, ~~further comprising a pharmaceutically acceptable carrier~~wherein the polymer is covalently coupled to a lysine within an amino acid sequence of the synthetic peptide.

23.(currently amended) The~~Use of a~~ substantially homogeneous conjugate ~~comprised of HIV gp41-derived peptide and polymer~~ according to claim 21 ~~as an active therapeutic substance in therapy of HIV infection~~wherein the polymer is covalently coupled to more than one lysine within an amino acid sequence of the synthetic peptide.

24.(currently amended) The~~Use of a~~ substantially homogeneous conjugate ~~comprised of HIV gp41-derived peptide and polymer~~ according to claim 2~~2~~1, wherein the HIV gp41-derived peptide is a peptide having an amino acid sequence of any one of SEQ ID NOs: 1-175, or an amino acid sequence having at least 95% identity with any one or more of SEQ ID NOs: 1-175~~as an active therapeutic substance in therapy of HIV infection~~.

25.(currently amended) A method of treating an individual infected with Human Immunodeficiency Virus (HIV), the method comprising administering to the individual an amount of t~~The use of a~~ substantially homogeneous conjugate ~~comprised of HIV gp41-derived peptide and polymer~~ according to ~~any one of~~ claims 2~~1~~3 ~~or 24~~, ~~wherein the substantially homogeneous conjugate~~ effective to inhibit HIV infection, and wherein the substantially homogeneous conjugate is administered separately or is ~~used~~ administered as a part of a therapeutic regimen containing one or more additional antiviral agents for therapy of HIV infection.

26. (currently amended) A method of treating an individual infected with Human Immunodeficiency Virus (HIV), the method comprising administering to the individual an amount of ~~Use of~~ a substantially homogeneous conjugate ~~comprised of HIV gp41-derived peptide and polymer~~ according to claim 2~~1~~4 ~~for the manufacture of a medicament for a therapeutic application comprising treatment of HIV~~effective to inhibit HIV infection, and wherein the substantially homogeneous conjugate is administered

separately or is administered as a component of a therapeutic regimen containing one or more additional antiviral agents for therapy of HIV infection.

27.(currently amended) A pharmaceutical composition comprising a substantially homogeneous conjugate ~~comprised of HIV gp41-derived peptide and polymer~~ according to claim 21 and a pharmaceutically acceptable carrier.

28.(currently amended) A pharmaceutical composition comprised of a substantially homogeneous conjugate ~~comprised of HIV gp41-derived peptide and polymer~~ according to claim 24~~2~~ and a pharmaceutically acceptable carrier.

29.(previously presented) A method for inhibition of transmission of HIV to a cell, comprising adding to the virus and the cell an amount of substantially homogeneous conjugate comprised of HIV gp41-derived peptide and polymer according to claim 21 effective to inhibit infection of the cell by HIV.

30.(previously presented) A method for inhibition of transmission of HIV to a cell, comprising adding to the virus and the cell an amount of a pharmaceutical composition according to claim 27 effective to inhibit infection of the cell by HIV.

31.(previously presented) The method according to claim 29, wherein the substantially homogeneous conjugate is added as a component of a therapeutic regimen.

32.(previously presented) The method according to claim 30, wherein the pharmaceutical composition is added as a component of a therapeutic regimen.

33.(previously presented) A method for inhibiting HIV fusion, comprising contacting the virus, in the presence of a cell, with an amount of substantially homogeneous conjugate comprised of HIV gp41-derived peptide and polymer according to claim 21 effective to inhibit HIV fusion.

34.(previously presented) A method for inhibiting HIV fusion, comprising contacting the virus, in the presence of a cell, with an amount of a pharmaceutical composition according to claim 27 effective to inhibit HIV fusion.